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ABSTRACT

Although predictive accuracy (cognitive empathy) and emotional empathy may be aspects of the same general ability, few empirical studies have examined the relationships between these dimensions. The relationship between cognitive empathy and emotional empathy was investigated by correlating the Mehrabian and Epstein Emotional Empathy Scale and its subscales with Cronbach's delineation of global predictive accuracy and its subcomponents. A modestly sized relationship was hypothesized, i.e., that persons with strong emotional empathy would also be more accurate in their perceptions of others. An analysis of the data collected from 372 undergraduates indicated no relationship between any of the Cronbach components of predictive accuracy and any of the subscales representing emotional empathy. However, the two types of empathy had distinctive patterns of correlations with locus of control. Persons who scored high on emotional empathy tended to have an external locus of control, whereas persons who scored high on predictive accuracy tended to have an internal locus of control. Gender differences occurred only among the emotional empathy scales, with women scoring higher than men. The results suggest that, contrary to prediction, the ability to judge accurately the attributes of others does not co-exist with the tendency to respond emotionally to the feelings of others.
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Relationships among Cognitive and Emotional Empathy Constructs

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Relationships among Cognitive and Emotional Empathy Constructs

The dualistic nature of empathy was first commented upon by Adam Smith in 1759. He distinguished between "intellectualized" empathy, which is cognitive in nature, and "instinctive" empathy, which is more affective. Intellectualized empathy, according to Smith, involves the ability to recognize the emotional experience of another and to respond appropriately without vicariously experiencing that person's emotional state. In contrast, instinctive empathy involves a quick, involuntary reaction to another's distress.

This distinction between cognitive and emotional empathy has persisted to the present time. The cognitive interpretation, employed by Diamond (1949, 1950), has been labelled "predictive accuracy" (Mehrabian & Epstein, 1972). The affective interpretation, employed by Stotland and his associates (e.g., Stotland & Dunn, 1963), has been labelled "emotional empathy" (Mehrabian & Epstein, 1972). Although many psychologists assume that these two types of empathy are conceptually distinct, there are some who have repeatedly concluded that a general empathic ability exists. G. W. Allport (1937) wrote that the ability to judge others was partially general and partially specific. He concluded, "It seems more of an error, however, to consider the ability entirely specific than to consider it entirely general" (Allport, 1937, 512). In a subsequent review of the literature, Taft (1955) agreed that such a general ability appeared to exist, but that it was weak because it was easily influenced by the type of judgments made and the circumstances of these judgments. More recently, Katz (1963) described raw empathy as the basic psychological ability which when refined becomes transformed into sophisticated empathy, a tool which allows observers to derive accurate information about others.

Although it is plausible that both predictive accuracy and emotional empathy are aspects of the same general ability, to date there have been few empirical studies which have examined the relationships between these two proposed dimensions. The dearth of research has left unanswered basic questions about the relationships between cognitive and emotional empathy. For example, are persons who are emotionally responsive to the emotions of others more likely to perceive others accurately? Or are these two empathic skills unrelated within individuals? To answer these questions, a study was undertaken to examine the degree of relationship between "cognitive" and "emotional" empathy.

Two Types of Empathy

Dymond (1949, 1950) was one of the first researchers to emphasize the cognitive aspects of empathy. She defined empathy as "the imaginative transposing of oneself into the thinking, feeling and acting of another" (Dymond, 1949;127). Her experiments reflected this definition. First, subjects interacted in mixed-sex groups of six or seven and completed self ratings on six bipolar psychological traits (e.g., superiority/inferiority, friendly/unfriendly). Subsequently, each subject acted as "judge" and estimated each of the other group members' self ratings on these traits. The discrepancy between the judge's ratings and the group members' self ratings was interpreted as an index of the judge's predictive accuracy.

The predictive accuracy interpretation of empathy was popular for several years, and was used by many researchers (e.g., Kerr & Speroff, 1951, Rogers, 1957; Cline & Richards, 1960). However, the research methodology used in these studies aroused considerable criticism. Cronbach (1955) delineated several types of error prevalent in the predictive accuracy

measures taken in this research. Cronbach's criticisms and those of others (e.g., Hastorf & Bender, 1952; Bender & Hastorf, 1953) were so thorough that the predictive accuracy approach to empathy research was abandoned by most investigators.

The waning interest in the cognitive interpretation of empathy was replaced by a renewed interest in the emotional interpretation. One of the instruments designed to measure emotional empathy was the Emotional Empathy Scale (Mehrabian & Epstein, 1972). The authors stated that their purpose was to "develop an adequate measure of emotional empathy--as distinct from predictive accuracy" (Mehrabian & Epstein, 1972, 526).

Multidimensional Constructs

Cronbach's criticism of a single global measure of predictive accuracy (such as that used by Dymond, 1949) rested on his demonstration that such a measure was actually composed of four distinct elements, all of which contain some error. The first element, known as Elevation, consists entirely of error and reflects the tendencies of the judge and the observed to use rating scales in the same or similar ways, regardless of any similarity in their perceptions of the trait being measured. For example, if both the judge and the observed person consistently circle "5" on each item of a self-esteem scale to describe the observed person, the two sets of assessments will be artifactually similar.

The second element of a global predictive accuracy measure also consists entirely of error. This element, Stereotype Accuracy, refers to the judge's ability to guess the modal response of the population and to base his or her ratings of others on this modal response. For example, if the judge has an intuitive knowledge of the modal score (e.g., an average response of "3" on the 5-point self-esteem scale), then his or her ratings

of the others will be more accurate if he or she does not assign ratings too discrepant from the modal score. Although this ability may reflect a special knowledge or cognitive skill, it does not necessitate having any empathic ability.

The remaining two elements of global predictive accuracy contain some true empathic skill components as well as some error. The first, Differential Elevation, reflects the judge's ability to assess deviations of the other's elevation from the average. Returning to the self-esteem example, an accurate judge must be able to determine the total discrepancy within the group between individual group members' self-esteem ratings and the group's mean self-esteem rating.

According to Cronbach (1955), Differential Elevation can be broken into three subcomponents. One subcomponent simply expresses the judge's assessment of how widely dispersed the judge's ratings of the observed persons will be. Thus, this variance term is meaningless in and of itself, and was considered unimportant by Cronbach. In the self-esteem example, this subcomponent represents the judge's estimate of the group's dispersion in self-esteem scores. The second subcomponent, which expresses the true dispersion of the observed persons' scores, was also regarded as unimportant by Cronbach. The third subcomponent shows the correlation between the two variance terms, and represents the judge's ability to determine which observed persons rate highest on the elevation scale. That is, this subcomponent shows how well the judge can assess individual differences in self-reported self-esteem. Since this subcomponent reflects a relatively pure ability to judge others, Cronbach considered it one measure of true predictive accuracy. Therefore, it is called here "true" Differential Elevation.

The last element of predictive accuracy reflects the judge's ability to predict differences between individuals on any item and is called Differential Accuracy. Using self-esteem as the example, Differential Accuracy reflects the judge's ability to differentiate, for any item on the self-esteem scale, scores between two observed persons. Like Differential Elevation, this element contains two variance terms and a correlation term. Of the three subcomponents of Differential Accuracy, one reflects the judge's dispersion on specific items after differences in elevation are removed. Thus, this term is also meaningless in and of itself, and was considered unimportant by Cronbach. The second component, also regarded as unimportant by Cronbach, merely reflects the dispersion of the observed person's scores on each item. The third subcomponent shows the correlation between the two variance terms, and measures the judge's ability to assess which observed persons have the highest scores on any one item, when the score is taken as a deviation from the mean. This subcomponent indicates whether the judges differentially assign ratings to the other members of the group for any item on the self-esteem scale. Since Cronbach considered this subcomponent of Differential Accuracy to be a relatively pure measure of the ability to judge others, it is referred to here as "true" Differential Accuracy.

In summary, Cronbach divided the global predictive accuracy measure used by Dymond and others into four elements. Two of these elements, Stereotype Accuracy and Elevation, contain only error. The other two elements, Differential Elevation and Differential Accuracy, were further subdivided to remove error variance. The remaining subcomponents, true Differential Elevation and true Differential Accuracy, represent relatively

pure measures of predictive accuracy.

Emotional empathy also appears to be a multidimensional construct. In terms of the scale devised by Mehrabian and Epstein, emotional empathy consisted of seven subscales: susceptibility to emotional contagion, appreciation of the feelings of unfamiliar and distant others, extreme emotional responsiveness, tendency to be moved by others' negative emotional experiences, sympathetic tendency, and willingness to be in contact with others who have problems. Unfortunately, Mehrabian and Epstein did not document the items which constituted each subscale. Therefore, in order to determine the multidimensional nature of this emotional empathy scale, a factor analysis is conducted here.

Since the Mehrabian and Epstein scale is a self-report measure, there is no means of determining if these reported reactions actually occur and whether they are appropriate. Therefore, one must conclude that this scale focuses on reported emotional reactivity to the observed experiences of others rather than the accuracy of the observers' assessment of these experiences.

In view of the importance of both types of empathy for psychology, it is surprising that little empirical effort has been devoted to examining the existence of a general empathic ability. This study will examine the relationship between emotional empathy and predictive accuracy by correlating the entire Mehrabian and Epstein Emotional Empathy scale and its subscales with Cronbach's delineation of global predictive accuracy and its subcomponents. It is hypothesized that a modestly sized relationship will be found such that persons with strong emotional empathy will also be more accurate in their perceptions of others.

Locus of Control

Another goal of this study is to examine the degree of association between the two basic types of empathy and locus of control. Given the disparate emphases of predictive accuracy and emotional empathy, separate hypotheses about the relationships between these two types of empathy and locus of control are justified. Since a modest, but significant correlation between these two types of empathy is expected here, it is empirically possible for these two distinct types of empathy to have diverse relationships with locus of control.

Specifically, it is predicted that emotional empathy will be positively related to externality. The rationale for this hypothesis is that emotional empathy represents a reactivity to others and is, therefore, determined more by the behavior of others than is predictive accuracy. Previous research provides mixed support for this hypothesis. Rim (1974) found that highly empathic persons also scored highly external. However, Deardorff, Kendall, Finch, and Sitarz (1977) found no relationship between these two variables. Although both studies employed the Mehrabian and Epstein Emotional Empathy scale, neither considered emotional empathy as a multidimensional construct. Therefore, in addition to testing the hypothesis, the present study will explore the relationships between the factors composing the global Emotional Empathy scale and locus of control.

It is also predicted that predictive accuracy will be negatively related to externality. The rationale for this hypothesis is that although true predictive accuracy is affected by the individuals observed (e.g. are they strangers or friends?), true predictive accuracy is more strongly determined by the abilities of the observer than characteristics of the observed. Previous research has failed to test this hypothesis. The present study will

explore the relationships between the components of predictive accuracy and locus of control to determine the pattern of associations between these cognitive skills and locus of control.

Gender Differences

The question of gender differences in empathy was raised by Dymond (1949) in her early research. Dymond reported no initial sex differences in the ability of subjects to predict how other members of their group rated themselves. However, when Dymond tested her subjects again six weeks later, female judges were found to be more accurate than male judges. In a follow-up study, Dymond (1955) found that women were again superior to men in making accurate judgments.

As Taft (1957) pointed out, however, these two studies differed from most of the other predictive accuracy studies in that Dymond's judges were well acquainted with each other. Most research on predictive accuracy involves judges who are strangers to one another. Taft (1955) and more recently Hoffman (1977) have reviewed this literature on gender differences and arrived at the same conclusion: there are no consistent gender differences in predictive accuracy.

However, females are generally found to be more emotionally empathic than males (Hoffman, 1977; Mehrabian & Epstein, 1972). This difference is considered to be brought about by sex-role socialization (Hoffman, 1977). Specifically, women's greater tendency toward emotional empathy has been related to the expressiveness emphasis of the female sex role. In contrast, men's weaker tendency toward emotional empathy has been related to the instrumental emphasis of the male sex role. Indeed, Hoffman (1977) has speculated that when emotional distress is observed in others, men and boys are more likely to take action to resolve the distress, while girls and

women are more likely to share the emotions of the distressed other.

In view of the results of previous research, it is hypothesized that no gender differences will be found in predictive accuracy but that women will score higher than men in emotional empathy.

In summary, four hypotheses are tested in this study. First, it is predicted that there will be a small, but significant and positive correlation between emotional empathy and predictive accuracy. Second, a positive correlation between emotional empathy and externality is expected. Third, a negative relationship between predictive accuracy and externality is hypothesized. Fourth, women are expected to score higher on emotional empathy than men. No gender differences in predictive accuracy are predicted.

Method

Subjects

The subjects were 179 male and 193 female undergraduates (18 to 25 years of age) who volunteered to participate in a study called The Small Group Study. The subjects were selected from a larger pool of 1752 undergraduates who participated in a survey. After completing the survey, the subjects were given a description of the Small Group Study. Subjects who volunteered to participate were contacted by telephone, from one to four months after their participation in the survey. Subsequently, 372 subjects were assigned to same-sex groups of four to six persons, which created 37 all-male and 37 all-female groups.

Procedure

The Survey consisted of a series of objective personality inventories and a biographical questionnaire. The subjects were told that the purpose of the survey was to gather information about the beliefs and preferences

of university students towards some aspects of their everyday lives. They were paid \$3.00 for their participation.

One of the personality inventories used in the survey was the 33-item Emotional Empathy scale (Mehrabian & Epstein, 1972). Another personality inventory was a modified version of the Rotter I-E scale (Rotter, 1966). The modification consisted of taking each of the 46 items from the original measure and asking subjects to express their agreement with these items by using a five point scale. The original format asked the subjects to choose between two items, one representing an "internal" and the other, an "external" position. In the modified version, used here, the order of the items was randomly mixed so that they did not alternate between internal and external items. In addition, there were twelve filler items in the original scale which were not included in the modified version. This modification allowed for the separate measurement of internality and externality. Previous investigations (Collins, 1974) comparing locus of control scores obtained by forced choice versus Likert scale items have found these scores to be highly correlated ($r=.82$). The modified version was used here because several investigators have demonstrated that the original Rotter scale, when factor analyzed, produces more than a single factor (Collins, 1974; Gurin, Gurin, Lao, & Beattie, 1969; Lao, 1970; Mirels, 1970).

In the Small Group Study, the subjects participated in a leaderless group discussion of no more than 15 minutes duration. Subsequently, the subjects were administered the short form of the Texas Social Behavior Inventory (Helmreich & Stapp, 1974), which they completed in reference to themselves and each member of the group. For example, in a group of five people, each person completed five Texas Social Behavior Inventories (TSBI),

one self-rating and the remaining four in reference to each other participant in the group. Measures of predictive accuracy were computed from these TSBI scores. In Cronbach's terms, each subject within a group was considered a judge whose ratings of the group members' TSBI scores constituted "predictions" of these group members' self-reports on the TSBI.

Predictive accuracy and its four components, Elevation, Differential Elevation, Stereotype Accuracy, and Differential Accuracy, were computed using equations provided by Cronbach (1955). True Differential Elevation and true Differential Accuracy were also derived using Cronbach's equations. (See the Appendix for the equations and computation methods.)

After completing the instruments, the subjects were paid \$5.00 for their participation and were debriefed.

Data Analysis

The data analysis consisted of three stages. First, the Emotional Empathy scale was factor analyzed by means of a principal components analysis with varimax rotation (Nie, Hull, Jenkins, Steinbrenner, & Bent, 1975).

The second stage of the data analysis consisted of a series of correlations. The first hypothesis was tested by a series of partial correlations between predictive accuracy and its components and emotional empathy and its factors. Partial correlations were conducted because it was expected that differences in the number of people in each group (ranging from four to six) might influence the accuracy of the Judge's predictions. Since the complexity of the Judge's prediction task may increase as group size increases, Judges in smaller groups may appear to be more accurate than Judges in larger groups. Therefore, in the partial correlations, the variance associated with the number of Others in each group was removed.

To test the second hypothesis, zero-order correlations were computed between locus of control and the emotional empathy scales. Since all of these measures were completed by the subjects during the larger survey, the number of Others in the Small Group Study could not have an influence on these scores. To test the third hypothesis, however, partial correlations were computed between predictive accuracy and its components and locus of control. In these analyses, the variance associated with number of people in the group was removed.

The hypotheses regarding gender differences were tested by means of a series of one-way analyses of variance comparing the predictive accuracy and emotional empathy scores of men and women. The third stage of the data analysis consisted of tests for gender differences in emotional empathy and predictive accuracy.

Results

Factor Analysis of Emotional Empathy

The first principal-components factor analysis with varimax rotation of the 33-item Emotional Empathy scale produced 12 rotated factors. Of these, only three factors had eigenvalues greater than 1.00, and they accounted for 58.8% of the variance, suggesting that the factor structure of the scale could be best described by three factors. Therefore, a second factor analysis was conducted in which three factors were specified for extraction. Table 1 presents the results of this factor analysis.

Insert Table 1 about here

The first emotional empathy factor that emerged accounted for 58.8% of the variance, and had an eigenvalue of 4.09. As shown in Table 1, the

items that loaded over .30 on this factor had in common a theme of sympathy for others; therefore, this first factor was labelled Sympathetic Concern. The items that loaded on this factor were items 1, 2, 6, 7, 8, 14, 16, 17, 18, 19, 27, 29, 30, and 31. After items worded in a reverse direction were recoded to be in the same direction as the majority of the items, these fourteen items were summed to create the Sympathetic Concern scale. The inter-item reliability of this scale yielded an alpha coefficient of .78.

The second emotional empathy factor that emerged accounted for 26.4% of the variance, and had an eigenvalue of 1.84. The items that loaded over .30 on this factor had in common a theme of emotional responses to the emotions displayed by others, and so the factor was labelled Susceptibility to Emotional Contagion. Eight items were used to compute this scale: items 5, 9, 10, 13, 29, 24, 25, and 32. Reversed items were recoded and these items were summed to yield the Susceptibility to Emotional Contagion scale. The alpha coefficient for this scale was .70.

The third emotional empathy factor that emerged accounted for the remaining 14.8% of the variance, and had an eigenvalue of 1.03. The items that loaded on this factor had in common a theme of avoidance of emotional responsiveness; this factor was labelled Callousness. Ten items loaded on this factor: items 6, 7, 8, 18, 21, 23, 26, 28, 30, and 31. Reversed items were recoded, and these ten items were summed to yield the Callousness scale. The alpha coefficient for this scale was .76.

Finally, because of low factor loadings on all three factors, items 3, 4, 11, 12, 15, 22, and 33 were not combined with any others to form one of the three emotional empathy subscales.

Two Types of Empathy

In order to test the hypothesis that a positive relationship would exist between predictive accuracy and emotional empathy, a series of partial correlations was conducted between predictive accuracy and its components and the emotional empathy scale and its three factors. Because the size of the groups varied in the Small Group Study, the variance associated with the size of the group was partialled from this correlation.

As shown in Table 2, the pattern of correlations between the predictive

Insert Table 2 about here

accuracy and emotional empathy variables indicate that the two measures of "true" predictive accuracy, true Differential Elevation and Accuracy, were not correlated with the global emotional empathy scale or its three factors. Therefore, the hypothesis that there is a general empathic ability within individuals is not supported.

Furthermore, Table 2 demonstrates that there is only one significant association between the error-containing components of predictive accuracy and emotional empathy. This result is probably due to chance.

Locus of Control

In order to test the hypotheses about emotional empathy and locus of control, a series of correlations was computed. As shown in Table 3,

Insert Table 3 about here

these correlations partially support the hypothesis. Specifically, Sympathetic Concern and Susceptibility to Emotional Contagion were positively and significantly correlated with externality. However, neither Callousness nor global Emotional Empathy were significantly related to externality. Note

that global Emotional Empathy and Susceptibility to Emotional Contagion were significantly and negatively correlated with internality.

In order to test the hypotheses about predictive accuracy and locus of control, a series of partial correlations was computed and they appear in Table 3. Because the size of the groups varied in the Small Group Study, the variance associated with the size of the group was partialled from these correlations.

Table 3 demonstrates that one of the two true measures of accurate perceiving, True Differential Elevation, was positively and significantly related to internality. This lends partial support to the hypothesis that predictive accuracy is negatively related to externality. True Differential Elevation was also positively and significantly correlated with internality. In addition, Differential Elevation (a component containing some error) was positively and significantly correlated with internality. None of the correlations between other components of predictive accuracy and locus of control were significant.

Gender Differences

In order to test for gender differences in predictive accuracy and emotional empathy, a series of one-way analyses of variance was conducted. The results showed no gender differences on either of the two "true" accuracy components. However, gender differences were found within the Emotional Empathy scale and all three factors. Specifically, women scored significantly higher than men on the entire Emotional Empathy scale, $F(1,364)=82.85$, $p < .001$; Sympathetic Concern scale, $F(1,368)=72.27$, $p < .0001$; and Susceptibility to Emotional Contagion scale, $F(1,367)=30.07$, $p < .0001$. Men scored higher than women on the Callousness scale, $F(1,368)=68.23$, $p < .0001$.

Discussion

The main goal of the study was to determine the degree of relationship between predictive accuracy (cognitive empathy) and emotional empathy (affective empathy). Contrary to prediction, no relationship was found between the two true types of predictive accuracy and the global emotional empathy scale or any of its factors. These results suggest that, in general, the ability to judge accurately the attributes of others does not co-exist with the tendency to emotionally respond to the feelings of others.

Moreover, the correlations of cognitive and affective empathy with locus of control provide further evidence that the two types of empathy generally do not overlap within the same individual. In particular, one measure of true predictive accuracy, True Differential Elevation, was positively related to internality and negatively related to externality. In contrast, one factor of emotional empathy, Susceptibility to Emotional Contagion, was positively related to externality and negatively related to internality. These differential patterns support the view that greater reactivity to the emotions of others is associated with the belief that factors outside one's control are largely responsible for outcomes; while greater accuracy in person perception is associated with the belief that individuals control their own outcomes.

Nonetheless, the results of this study indicate that cognitive and affective empathy have one aspect in common: they are both multidimensional. Cronbach's delineation of the basic elements and subcomponents of predictive accuracy guided the computation of these scores in the present study. In addition, the factors of emotional empathy were derived in this study by a factor analysis of Mehrabian and Epstein's (1972) Emotional Empathy scale.

Three emotional empathy factors were produced. These reflected tendencies: (1) to respond sympathetically to the travails of others, (2) to be susceptible to the emotions of others, and (3) to experience disdain for the emotions of others.

The pattern of gender differences found here is consistent with that of previous research. That is, gender differences in emotional empathy, but not predictive accuracy were found. Women reported themselves to be more susceptible to the emotions of others and more sympathetic to their concerns than men. In contrast, men expressed greater callousness to the feelings of others than did women. However, men and women were found to be equally accurate in judging others.

These results have implications for clinical training. Specifically, it is clear from the lack of relationship between the two types of empathy that training students to respond sympathetically or to react empathetically to a client's emotions will not improve the accuracy of their perceptions of the client.

While this conclusion may be regarded as obvious to some, it is controversial to others. For example, Truax and his colleagues (e.g., Truax & Carkhuff, 1967) developed an empathy construct called Accurate Empathy. This construct was defined as both the therapists' "sensitivity to current feelings" and their "verbal facility to communicate this understanding in a language attuned to the client's current feelings" (Truax & Carkhuff, 1967, 46). However, as Truax (1972) and his critics (Chinsky & Rappaport, 1970; Rappaport & Chinsky, 1972) agreed, Accurate Empathy is measured solely as a therapist attribute with no assessment of the accuracy of this empathy. Apparently, Truax and his colleagues assumed that the expression of emotional empathy indicates that accurate interpersonal perception has

occurred. Unfortunately, the results of the present study indicate that such an assumption is unwarranted. Therefore, training clinical students to make empathic-sounding statements may have desirable effects on clients, but the utterance of such statements does not mean that the therapists are more accurate perceivers of their clients.

In conclusion, the results of this study argue against the existence of a general empathic ability that expresses itself in both cognitive and affective ways. Instead, the ability to judge others accurately represents an individual attribute distinct from emotional empathy.

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Table 1

Factor Loadings, Means, and Standard Deviations
of 33 Emotional Empathy Items

Item	Factor 1	Factor 2	Factor 3	M	SD
1. It makes me sad to see a lonely stranger in a group.	.39	.08	.12	7.0	1.7
2. People make too much of the feelings and sensitivity of animals.	-.41	-.06	.08	6.8	2.3
3. I often find public displays of affection annoying.	-.01	.00	.20	5.5	2.4
4. I am annoyed by unhappy people who are just sorry for themselves.	.16	-.11	.19	3.6	2.2
5. I become nervous if others around me seem to be nervous.	.03	.49	+.06	4.4	2.3
6. I find it silly for people to cry out of happiness.	-.33	.14	.49	7.5	2.1
7. I tend to get emotionally involved with a friend's problems.	.35	.14	-.30	6.3	2.2
8. Sometimes the words of a love song can move me deeply.	.46	.06	-.30	7.1	2.3
9. I tend to lose control when I am bringing bad news to people.	.05	.46	-.09	3.6	2.2
10. The people around me have a great influence on my moods.	.25	.41	.08	6.0	2.2

Table 1 (continued)

Item	Factor 1	Factor 2	Factor 3	M	SD
11. Most foreigners I have met seemed cool and unemotional.	-.03	.12	.12	6.9	2.0
12. I would rather be a social worker than work in a job training center.	.05	.02	-.16	5.5	2.5
13. I don't get upset just because a friend is acting upset.	-.08	-.50	.20	4.4	2.3
14. I like to watch people open presents.	.46	.00	-.10	7.6	1.7
15. Lonely people are probably unfriendly.	-.17	.08	.21	7.7	1.7
16. Seeing people cry upsets me.	.32	.29	.01	6.0	2.3
17. Some songs make me happy.	.49	.03	-.14	8.3	1.1
18. I really get involved with the feelings of the characters in a novel.	.30	.10	-.36	7.0	2.0
19. I get very angry when I see someone being ill-treated.	.41	.01	-.09	8.0	1.3
20. I am able to remain calm even though those around me worry.	.12	-.62	.18	3.8	2.0
21. When a friend starts to talk about his problems, I try to steer the conversation to something else.	-.14	.04	.35	7.3	1.0
22. Another's laughter is not catching for me.	-.24	-.06	.20	7.6	1.7
23. Sometimes at the movies I am amused by the amount of crying and sniffing around me.	-.02	-.04	.41	5.0	2.4

Table 1 (continued)

Item	Factor 1	Factor 2	Factor 3	M	SD
24. I am able to make decisions without being influenced by people's feelings.	-.05	-.40	.09	5.7	2.1
25. I cannot continue to feel OK if people around me are depressed.	.14	.51	.12	5.5	2.1
26. It is hard for me to see how some things upset people so much.	-.07	-.22	.47	5.0	2.5
27. I am very upset when I see an animal in pain.	.52	.09	.09	7.4	2.0
28. Becoming involved in books or movies is a little silly.	-.23	-.12	.49	7.4	1.8
29. It upsets me to see helpless old people.	.38	.08	-.07	7.6	1.7
30. I become more irritated than sympathetic when I see someone's tears.	-.50	.06	.47	7.8	1.5
31. I become very involved when I watch a movie.	.35	.20	-.41	6.7	2.0
32. I often find that I can remain cool in spite of the excitement around me.	-.07	-.40	.17	4.6	2.3
33. Little children sometimes cry for no apparent reason.	.00	-.08	.17	5.2	2.7

Note: All items were taken from The Emotional Empathy Scale (Mehrabian & Epstein, 1972).

Table 2

Partial Correlations between Predictive Accuracy and Emotional Empathy

Empathy Component	Global Emotional Empathy	Sympathetic Tendency	Susceptibility to Emotion	Callousness
Global Predictive Accuracy	-.01	.03	.00	.05
Elevation	-.05	-.07	.03	.10*
Differential Elevation	.00	.06	-.06	.02
Stereotype Accuracy	-.04	.02	-.03	.06
Differential Accuracy	-.02	.00	.02	-.06
True Differential Elevation	-.01	.03	-.06	-.07
True Differential Accuracy	-.03	.04	-.02	-.07

Note: $N = 322$; $*p < .05$. The variance associated with the number of people in the group was removed from these correlations.

Table 3

Correlations between Emotional Empathy,
Predictive Accuracy, and Locus of Control

Empathy	Locus of Control	
	Internality	Externality
Global Emotional Empathy	-.11*	.09
Sympathetic Tendency	-.06	.12**
Susceptibility to Emotion	-.15**	.21***
Callousness	.05	.02
Global Predictive Accuracy	.04	.02
Elevation	-.08	.02
Differential Elevation	.14**	.06
Stereotype Accuracy	.06	-.06
True Differential Elevation	.14**	-.11*
True Differential Accuracy	.08	-.04

Note: * $p < .05$; ** $p < .01$; *** $p < .001$. N ranges from 295-359. The correlations between emotional empathy measures and locus of control are zero-order; while those between predictive accuracy measures and locus of control are partial, removing group size.

APPENDIX: Cronbach's Equations Used to
Compute Perceptual Accuracy and its Subcomponents

Perceptual accuracy was defined mathematically as Cronbach's (1955) equation:

$$ACC_j^2 = \frac{1}{kN} \sum_o \sum_i (y_{oij} - x_{oi})^2 \quad [1a]$$

$$\frac{1}{kN} \sum_o ACC_{oj} = (\bar{y}_{..j} - \bar{x}_{..})^2 \quad [1b]$$

$$+ \frac{1}{N} \sum [(\bar{y}_{o..j} - \bar{y}_{..j}) - (\bar{x}_{o.} - \bar{x}_{..})]^2 \quad [1c]$$

$$+ \frac{1}{k} \sum [(\bar{y}_{.ij} - \bar{y}_{..j}) - (\bar{x}_{.i} - \bar{x}_{..})]^2 \quad [1d]$$

$$+ \frac{1}{kN} \sum_o \sum_i (y_{oij}' - x_{oi}')^2 \quad [1e]$$

In this equation, y_{oij} is Judge j 's description of other o on item i ;

x_{oi} is the self-description of other o on item i . Means are indicated by

subscript dots. Thus, $\bar{y}_{o..j}$ [1c] indicates the average of y_{oij} over all

items. [1a] represents global accuracy (ACC), the accuracy with which

Judge j perceives all others. [1b] through [1e] represent elevation (EL),

differential elevation (DE), stereotype accuracy (SA), and differential

accuracy (DA), respectively. In [1e], y_{oij}' and x_{oi}' are further defined as

$$y_{oij}' = y_{oij} - \bar{y}_{o..j} - \bar{y}_{.ij} + \bar{y}_{..j}$$

$$x_{oi}' = x_{oi} - \bar{x}_{o.} - \bar{x}_{.i} + \bar{x}_{..}$$

True Differential Accuracy was computed in the following manner.

Cronbach's (1955) equation

$$DE = \sigma \bar{y}'_{oij}{}^2 + \sigma \bar{x}'_{o.}{}^2 - 2\sigma \bar{y}'_{o..j} \sigma \bar{x}'_{o.} r \bar{x}'_{o.} \bar{y}_{o..j}$$

APPENDIX (continued)

was rewritten as:

$$r_{\bar{x}_o, \bar{y}_{o,j}} = \frac{\sigma_{\bar{y}_{o,j}}^2 + \sigma_{\bar{x}_o}^2 - DE}{2\sigma_{\bar{y}_{o,j}} \sigma_{\bar{x}_o}} \quad [2]$$

True Differential Accuracy was computed in the following manner.

Cronbach's (1955) equation

$$DA = \sigma_{y'_{oij}}^2 + \sigma_{x'_{oi}}^2 - 2 \sigma_{y'_{oij}} x'_{oi} r_{y'_{oij} x'_{oi}}$$

was rewritten as:

$$r_{y'_{oij} x'_{oi}} = \frac{\sigma_{y'_{oij}}^2 + \sigma_{x'_{oi}}^2 - DA}{2\sigma_{y'_{oij}} \sigma_{x'_{oi}}} \quad [3]$$